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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KOUJI INAISHI

Appeal No. 1997-2210
Application 08/396,054

HEARD: May 15, 2000

Before GARRIS, LIEBERMAN, and KRATZ, Administrative Patent Judges.

LIEBERMAN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 1, 2, 6, 8 through 10, 13, and 14 which are all the claims remaining in the application.

THE INVENTION

The invention is directed to a photocurable composition sensitive to visible light and near infrared radiation comprising 100 parts by weight of a polymerizable unsaturated compound, 1-40 parts by weight of a metal arene, 0.05-20 parts by weight of a squarylium dye and 0.1-20 parts by weight of selected N,N-dialkylaniline sensitizers.

THE CLAIM

Claims 1 is illustrative of appellant's invention and is reproduced below.

1. A photocurable composition highly sensitive to near infrared radiation and visible light having a wavelength of greater than 550 nm, comprising:

100 parts by weight of a radical polymerizable unsaturated group-bearing compound;

1-40 parts by weight of a metal arene compound;

0.05-20 parts by weight of a squarylium dye; and

0.1-20 parts by weight of N,N-dialkylaniline sensitizer selected from the group consisting of N,N-dimethylaniline, N,N-diethylaniline, N,N,2,4,6-pentamethylaniline, 2,6-diethyl-N,N-dimethylaniline, 2,6-diisopropyl-N,N-dimethylaniline, p-t-butyl-N,N-dimethylaniline, 4,4-methylenebis-N,N-dimethylaniline, 4-bromo-N,N-dimethylaniline, 4-chloro-N,N-dimethylaniline, 3-chloro-N,N-dimethylaniline, 4-fluoro-N,N-dimethylaniline, N,N-dimethyl-p-toluidine, N,N-dimethyl-p-phenylenediamine, N,N-dimethyl-m-phenylenediamine, and 4-dimethylaminoazobenzene.

THE REFERENCES OF RECORD

As evidence of obviousness, the examiner relies upon the following references.

Adair	4,874,685	Oct. 17, 1989
Imahashi et al. (Imahashi)	4,987,056	Jan. 22, 1991
Ali	4,988,607	Jan. 29, 1991
Okuhara et al. (Okuhara)	5,102,775	Apr. 7, 1992
Smothers et al. (Smothers)	5,147,758	Sep. 15, 1992
Nagasaka et al. (Nagasaka)	5,219,709	Jun. 15, 1993 (filed Feb. 26, 1992)

Kosar, "Light-Sensitive Systems: Chemistry and Application of Nonsilver Halide Photographic Processes," John Wiley & Sons, Inc., p. 145, 1965.

THE REJECTIONS

Claims 1, 2, and 8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Ali in view of Nagasaka and Adair with either Okuhara or Imahashi.

Claim 6 stands rejected under 35 U.S.C. § 103 as being unpatentable over Ali in view of Nagasaka and Adair with either of Okuhara or Imahashi as applied to claims 1, 2, and 8 and further in view of Nagasaka or Smothers.

Claims 9, 10, 13, and 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Ali in view of Nagasaka and Adair with either of Okuhara or Imahashi and further in view of Smothers.

OPINION

We have carefully considered all of the arguments advanced by appellant and the examiner and agree with the appellant that the aforementioned rejections under 35 U.S.C. § 103 are not well founded. Accordingly, we do not sustain the examiner's rejection.

The Rejections under § 103

Under 35 U.S.C. § 103, the obviousness of an invention cannot be established by combining the teachings of the prior art references absent some teaching, suggestion or incentive supporting the combination. ***See ACS Hospital Systems, Inc. v. Montefiore Hospital***, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). This does not mean that the cited prior art references must specifically suggest making the combination. ***See B.F. Goodrich Co. V. Aircraft Braking Systems Corp.***, 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996); ***In re Nilssen***, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988). Rather, the test for obviousness is what the combined teachings of the prior art references would have fairly suggested to those of ordinary skill in the art. ***In re Young***, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991); ***In re Keller***, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). In evaluating such prior art references, it is proper to take into account not only their specific teachings but also the inferences which one skilled in the art would reasonably be expected to draw therefrom. ***In re Preda***, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

The examiner relies upon a combination of up to five different references to reject the claimed subject matter and establish a ***prima facie*** case of obviousness. One of the underlying premises of the examiner's rejection is that it would have been obvious to one of ordinary skill in the art to employ the N,N-dialkylaniline compounds of Adair in the composition of Ali. The reasoning of the examiner is that, "[s]ince Adair teaches that N,N-dialkylanilines within the scope of the instant claims are equivalent to those exemplified by Ali as photopolymerization accelerators, and Ali teaches that his N,N-dialkylanilines act not only as accelerators but also impart higher storage stability to photopolymerization compositions without attendant loss of imaging speed, it is reasonable to presume that the p-substituted-N,N-dialkyl anilines within the scope of the instant claims inherently possess said dual functions," and therefore can be combined. See Answer, page 7. We disagree.

In our view the examiner's rejection is predicated upon an assumption that the individual components in a photopolymerizable system perform standard functions and are interchangeable with other photopolymerizable systems. However, our analysis of the references of record reveals that the only component uniformly present and performing the same function in each of the references of record is the polymerizable unsaturated compound. The photopolymerization systems otherwise contain diverse initiators, sensitizers and other components which interact with each other in a unique but a systematic manner. In our view N,N-dialkyl anilines are one such component which performs a different function in each of the references in which they are present.

The primary reference to Ali discloses a photopolymerizable composition

comprising an ethylenically unsaturated compound, a photoinitiator and a sensitizer. See column 3, lines 25-44. Reference is made in Ali, column 3, line 67, to U.S. Patent No. 4,366,228, which also discloses a photopolymerizable composition. The activators disclosed in U.S. Patent No. 4,366,228 include N,N-dialkyl anilines among numerous other amines each of which are utilized in photopolymerization in the presence of photosensitizing compounds. No other photo initiators are utilized in U.S. Patent No. 4,366,228. See column 9, line 34 to column 10, line 46. Accordingly, N,N-dialkylanilines when used as initiators constitute the sole initiators in the photopolymerization system.

In contrast Ali's photopolymerizable system utilizes s-triazine as a preferred photo initiator. See column 3, lines 1-35. N,N-dialkyl substituted anilines are only optional components in the photopolymerization system of Ali. See column 4, lines 34-36. They have the "surprising function of imparting higher storage stability." See column 4, lines 3-4. Ali's contribution is directed to the utilization of N,N-substituted anilines to improve the shelf life, i.e., storage stability of the photopolymerizable composition. See column 4, lines 34-36 and column 8, lines 37-56. There is no suggestion in Ali that the N,N-dialkyl anilines function as initiators in his photo polymerizable system.

As to Adair, the photo polymerizable system of Adair contains a photo sensitizer which differs from the sensitizer of either Ali or U. S. Patent No. 4,366,228. The system of Adair utilizes a thiol as the indispensable photo initiator, which initiator may be the sole initiator present. See column 1, lines 11-12 and column 3, lines 38-39. N, N-dialkyl anilines may optionally be present as "autooxidizers," column 3, lines 41-

46, and be part of the photoinitiator system. See, Abstract and claim 1. However, there is no teaching or suggestion that the N,N-dialkylanilines of Adair can function by themselves as initiators in the system of Adair. Based upon the above analysis, it is reasonable to conclude that substituted N,N-dialkylanilines within the scope of the instant claimed subject matter perform a variety of functions in photopolymerization systems. Based upon the evidence of record, the person having ordinary skill in the art would have been unable to predict what specific functions, if any, N,N-dialkylanilines would perform in a photopolymerization system containing a metal arene initiator and a squarylium dye.

Accordingly, we conclude that there is no teaching, suggestion or incentive supporting the combination of the N,N-dialkylaniline compounds of Adair in the composition of Ali.

Similarly, the metal arene initiators of Imahashi and Okuhara function as initiators in photo polymerizable systems completely unlike those of Ali and Adair. We determine that there is no teaching or suggestion in either of Imahashi or Okuhara to utilize only the metal arenes taught therein and insert them into a system containing N,N-dialkylaniline sensitizers.

Based upon the above analysis, we have determined that the examiner's legal conclusion of obviousness is not supported by the facts. "Where the legal conclusion [of obviousness] is not supported by the facts it cannot stand." ***In re Warner***, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967). Because we reverse on this basis, we need not reach the issue of the sufficiency of the showing of unexpected results. See Brief, pages 14-17. *See* ***In re Geiger***, 815 F.2d 686,

688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987).

DECISION

The rejection of claims 1, 2, and 8 under 35 U.S.C. § 103 as being unpatentable over Ali in view of Nagasaka and Adair with either Okuhara or Imahashi is reversed.

The rejection of claim 6 under 35 U.S.C. § 103 as being unpatentable over Ali in view of Nagasaka and Adair with either of Okuhara or Imahashi as applied to claims 1, 2, and 8 and further in view of Nagasaka or Smothers is reversed.

The rejection of claims 9, 10, 13, and 14 under 35 U.S.C. § 103 as being unpatentable over Ali in view of Nagasaka and Adair with either of Okuhara or Imahashi is reversed.

The decision of the examiner is reversed.

REVERSED

Bradley R. Garris Administrative Patent Judge	)
Paul Lieberman Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
Peter F. Kratz Administrative Patent Judge	)

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